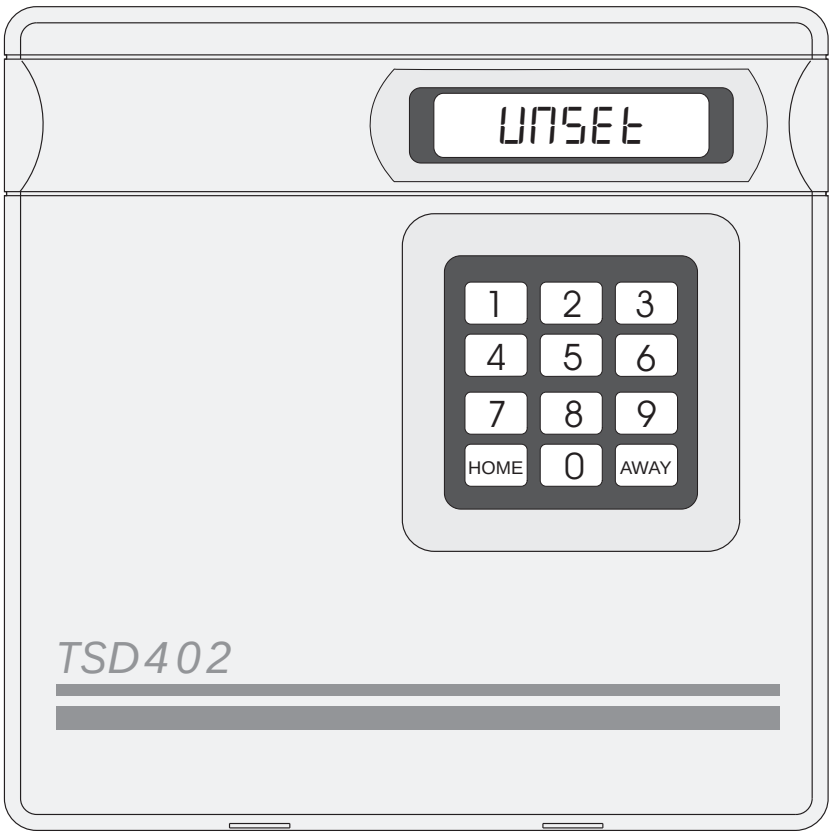
TSD402

Intruder Alarm
Control Panel & Speech Dialler



Installation & Programming Instructions

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Regulatory Requirements

General

The TSD402 control panel must be installed by a electrically competent person. Before attempting to install the unit, the installer must be aware of the following:

Application

The TSD402 is suitable for connection to the following types of telephone networks:

- Direct exchange lines (PSTN) supporting DTMF (Tone dialling) or Loop Disconnect (Pulse Dialling).
- PABX exchanges (with or without secondary proceed indication).

☞ *The TSD402 is not suitable for connection as an extension to a pay phone or 1+1 carrier systems.*

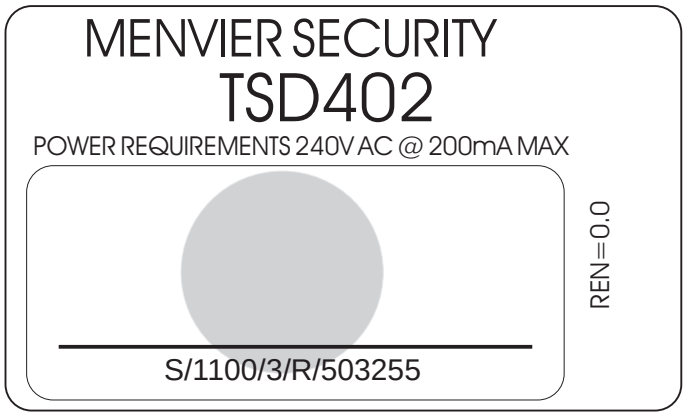
Approval

The TSD402 is approved for the following usage:

- Automatic call initialisation
- Operation in absence of proceed indication
- Automatic dialling
- Multiple repeat attempts

Usage other than the approved usage or failure to comply with the installation and programming instructions may invalidate any approval given to the apparatus.

Note the approval Label on back of the control panel:



Connections

Connection terminals on the TSD402 are described as either "Safety Extra-Low Voltage" circuits (S.E.L.V) or "Telecommunications Network Voltage" circuits (T.N.V).

The Printed Circuit Board (PCB) layout on page 11 shows the two types of circuits.

☞ *It is important that the installer ensures that T.N.V connections are only connected to the PSTN and S.E.L.V circuits are only connected to other circuits designated as S.E.L.V circuits.*

☞ *Interconnection circuits should be such that the equipment continues to comply with the requirements of 4.2 of EN 41003 for T.N.V circuits and 2.3 of EN 60950 for S.E.L.V circuits, after making connections between circuits.*

Compatibility with PABXs

The TSD402 is only approved for use with compatible PABX systems. Correct operation in all circumstances is not guaranteed. If you experience any difficulties contact Menvier Technical Support.

Responsibility for Connection To Telephone Network

The person responsible for connection of the TSD402 to a PABX system is as follows:

1 If the wiring is owned by British Telecom PLC
   a) British Telecom

2 If the wiring is not owned by British Telecom, either:
   a) British Telecom
   b) The authorised maintainer
   c) A professional installer after 14 days written notice to the authorised maintainer.

Ringer Equivalence Number (REN)

The Ringer Equivalence Number for the TSD402 is 0.0 and as such any number can be simultaneously connected to an exclusive line.

Overview

Introduction

The TSD402 is a 5 zone (+ Final Exit) control panel with an integral Speech Dialler. It is ideally suited for domestic and small commercial installations, which require additional security through the communication of audio alarm messages over the telephone line.

Features

- 5 Programmable zones Night, Access, Fire, PA & Keyswitch (plus common tamper)
- Final Exit zone
- Detector Reset output for Vibration and Smoke detectors
- Internal and external volume controls
- 16 character Liquid Crystal Display (LCD)
- 2 user passcodes and engineers passcode
- 64 event log
- Programmable Chime facility on all zones
- Remote Reset facility
- 3 button Quick-Set for Home and Away
- Program data stored in NVM (recorded messages are not)
- Remote Keypad option (up to 4 x TS400 Remote Keypads)
- Auxiliary trigger inputs for the speech dialler
- Speech dialler activations may report to different telephone numbers
- Built in microphone and speaker for record and play-back
- Messages may be up to a total of 60 seconds in length

Control Panel Operation

Operation and programming is carried out from the tactile rubber keypad on the control panel in conjunction with the 16 character LCD display.

There are two programming menus within the system. The engineer's programming menu allows full system programming (zone types, view log, walk test, exit time, entry time, bell duration time, engineers code, reset number, system options). The user programming menu allows setting and unsetting of the system as well as allowing the user to test the system. All speech dialler programming, configuration and testing is also carried out within the "User Options" menu **(for full details on speech dialler programming see User Manual).**

The TSD402 incorporates a 3 button set facility which simplifies the setting and part-setting of the system for user. When the user wishes to full set the system, they simply enter the first 2 digits of their passcode followed by the AWAY key. To part-set the system, they simply enter the first 2 digits of their passcode followed by the HOME key. When unsetting the system the user must enter all 4 digits of the passcode.

Speech Dialler Operation

The speech dialler may be configured by the engineer to trigger on FIRE, P.A. or ALARM activations for both the Away set and Home set. In addition to alarm triggers provided internally from the control panel, there are 3 auxiliary inputs which may be used by other devices to trigger the speech dialler independently from that of the control panel.

Telephone Numbers - The TSD402 stores up to three different telephone numbers. Each number may be up to 16 digits long and are simply programmed using the text display and keypad on the unit. The unit is compatible with most PABX systems that require a pause or wait for secondary dial tone. **Note: The Emergency Service numbers (999 &112) cannot be programmed into the unit.**

Messages - The TSD402 has a built-in microphone and speaker so that phrases can be recorded and replayed directly from the unit. A message is formed by combining a common phrase (0) and one of the alarm phrases (F, P or A). When the out-going call is answered the unit plays the common phrase (0) and one of the three alarm phrases F, P or A. Phrase 0 states the name and address of the user and phrases F, P and A relate to the alarm type (FIRE ,PA, ALARM). There is 60 seconds of recording time available for phrases and each phrase can be any length as long as the total does not exceed 60 seconds. For example, the "Common Phrase" may be 12 seconds, "Phrase F" 5 seconds, "Phrase P" 8 seconds and "Phrase A" 7 seconds.

Reporting Options - Each alarm type (F, P or A) may be programmed to report only to selected telephone numbers. For example the Fire activation may be programmed to report to all three telephone numbers, whereas the Alarm activation may be programmed to report only to telephone numbers 1 and 3 etc.

Call Acknowledgement - When the call is answered, the message is played. At the end of the message the unit sends an audible "bleep" which must be answered within 2 seconds using the tone generated by pressing the number [8] button on a standard telephone. On hearing the [8] tone the unit immediately sends a second "bleep" which must be answered in the same way. If successful, a multi-tone confirmation signal is then heard, if not then the message is

repeated with the acknowledgement "bleeps" again. If the call is not acknowledged at the end of the fifth play of the message the unit abandons that call and attempts the next telephone number. This procedure is repeated three times in sequence for all three telephone numbers. If no acknowledgement has been received then the speech dialler shuts down.

Acknowledgement Options - The TSD402 may be programmed to stop dialling after the first call has been acknowledged or when two, or three have been acknowledged. The acknowledgement may also be disabled altogether, when the speech dialler is used in this mode it dials the first telephone number and providing the call is answered it plays the message and shuts down. If the call is not answered it dials the next telephone number etc.

Aborting a Call - If the system is accidentally triggered the speech dialler is automatically shut down when a valid user passcode is entered.

Tone Dialling simulators (Tone Pads)

For the acknowledgement procedure to work successfully the TSD402 "looks" for a 1 second of tone between 600Hz and 1400Hz. This is supplied most reliably by the [8] button used for MF dialling although other buttons may work if pressed accidentally.

If the recipients telephone cannot produce a suitable tone then a "Tone Dialling Simulator" (Tone Pad) may be required. These are available from many high street electrical stores and also from specialist suppliers such as RS Components (stock code 252-841) and Maplin Electronics (stock code CK25C).

Specifications

Panel Input Voltage:	240V +/- 10% 50Hz
Current Consumption:	80 mA
Auxiliary power:	13.8v @ 300 mA
Remote Keypad:	TS400REM (normal 20mA, alarm 32mA)
Trigger inputs (speech dialler):	+ve or -ve applied, input voltages 5 - 28V
REN Value:	0
BT Approval number:	S/1100/3/R/503255
Control Panel Dimensions:	205 (W) x 205 (H) x 64 (D) mm
Remote Keypad Dimensions:	130 (W) x 130 (H) x 30 (D) mm
Control Panel Weight:	1.4 Kg
Battery Size	2.1Ah
Case Construction:	3mm Polycarbonate
Environment:	0 - 55°C

System Planning

General

The TSD402 is a flexible system, but care must be taken in planning the installation to provide maximum protection with minimum installation effort.

Survey the household and determine where each security device is to be fitted. Wherever possible, try to conceal wiring (e.g., in the loft, under carpets or floorboards and inside cupboards). Commit the system design to paper for easy reference.

Cable Routing

When installing cables, the following should be noted:

- Ensure that all cables are kept clear of mains supply cables, telephone cables, cables supplying bells or sounders and any cables likely to induce electrical noise (R.F.)into the system.
- Screened cable may prove necessary if cables are run adjacent to cables which carry R.F. (electrical noise) or are switching high current loads.
- The mains power supply cable to the system must be connected to an un-switched fused spur that cannot be accidentally switched off. The mains cable must enter the housing via its own cable entry point.

Control Panel

The control panel should be sited in a position where it has easy access for the users to set and unset the system. It should also be mounted in a well lit area and at a level where it is easy to read the Liquid Crystal Display (LCD). The provision for connecting to a permanent mains supply must also be considered.

The control panel is supplied with a 2 metre telephone lead which plugs directly into any standard B.T. telephone socket, it is therefore recommended that the unit is also sited as near to a B.T. telephone socket as possible. If this it not possible an approved B.T. extension lead may be required or the unit can be hard wired to the B.T. socket (*see Installation*).

When operating the system it should be possible to hear the exit and entry tones throughout the exit/entry route and outside the final exit door. If the control panel is sited along way from the final exit door it may be necessary to fit an extension loudspeaker.

Remote Keypads

If required, up to four remote keypads may be connected to the system to allow remote setting and unsetting of the system. The remote keypad uses LED indicators to show zone faults and alarms, and has an internal sounder to indicate exit and entry tones. Remote keypads require a six-core cable for connection.

External Sounder

The External Sounder should be mounted as high as possible so that it is visible and out of reach to potential intruders. A six core cable is required for connection to the sounder, it should enter directly through the wall and into the sounder via the cable entries in the back plate. However, if the cable is run over the surface to the sounder then it should be protected (e.g., the cable may be run in aluminium conduit).

Detection devices

There are several types of detection devices available which are suitable for domestic installations as follows:

Passive Infra-Red (PIR) - A movement detector which detects movement of an intruder by the change in infra-red body heat. When fitting PIRs, refer to the installation instructions supplied with the unit.
In general there are two types of PIR "Standard" and "Latching". Normally the standard type is used where one detector per zone is fitted. A six core cable is required for connection.
The latching type is used when more than one detector is fitted to a zone, the latch facility allows the user to identify the triggered detector by means of the indicator LED on the detector "latching" on. If latching detectors are used an eight core cable is required for connection.

Magnetic Contacts - Magnetic contacts consist of an electrical switch which is operated by a magnet. They come in two varieties, the "Flush" type is designed to be fitted into the top or side of the door/window. The "Surface" type is designed to fitted to doors/windows where it is not possible to use flush contacts e.g. garage doors, UPVC windows etc. Both types of contacts require a four core cable for connections.

Personal Attack (PA) Button - Normally PA buttons are located by the front door or adjacent to the bed, and preferably out of reach to small children. Pressing the button at any time will generate a full alarm. After pressing the button, it must be reset with the key provided and then reset at the control panel. PA buttons require a four core cable for connections.

Vibration Detectors - Vibration detectors are normally fitted to windows or door frames. They are triggered when the device senses a shock attack. Vibration detectors require a six core cable for connections.

Smoke/Heat Detectors - 12V Smoke or heat detectors may be connected to the system to provide additional protection against fire. When activated a distinctive internal sounder tone is generated and the external sounder is pulsed. Smoke detectors require a four core cable for connections.

Final Exit

This is the point at which the user leaves and enters the premises (normally the front door). When setting the system the user must leave the premises via the exit route and through the Final Exit zone. When re-entering the premises the user must activate the Final Exit zone to start the entry timer which allows the user time to gain access to the control panel to unset the system. If the user enters the premises through any other point and triggers a detection device a full alarm will be generated.

The system may be programmed to set after the exit timer has expired or by the operation of the Final Exit detection device.

Keyswitch

An optional keyswitch may be fitted to the system to allow the user to set and unset (or part-set and unset) the system using a physical key rather than a four digit passcode.

Power Supply Considerations

The maximum current available from the control panel power supply is 750mA. The total current consumption of all devices (Panel, detectors, sounders, strobes battery charge etc.) that are connected to the system must not exceed 750mA.

The following is a typical example on how the total current is calculated. When calculating the total current for your own installation refer to the manufacturers specifications on each device.

Total available current from control panel = 750mA

Control panel	= 80mA
	+
External Sounder	= 250mA
	+
External Strobe	= 120mA
Total Current	= 450mA
Auxiliary Current	= 300mA (750 -450)

From the above calculation example there is 300mA available for powering detection devices etc.

System Installation

Control Panel layout

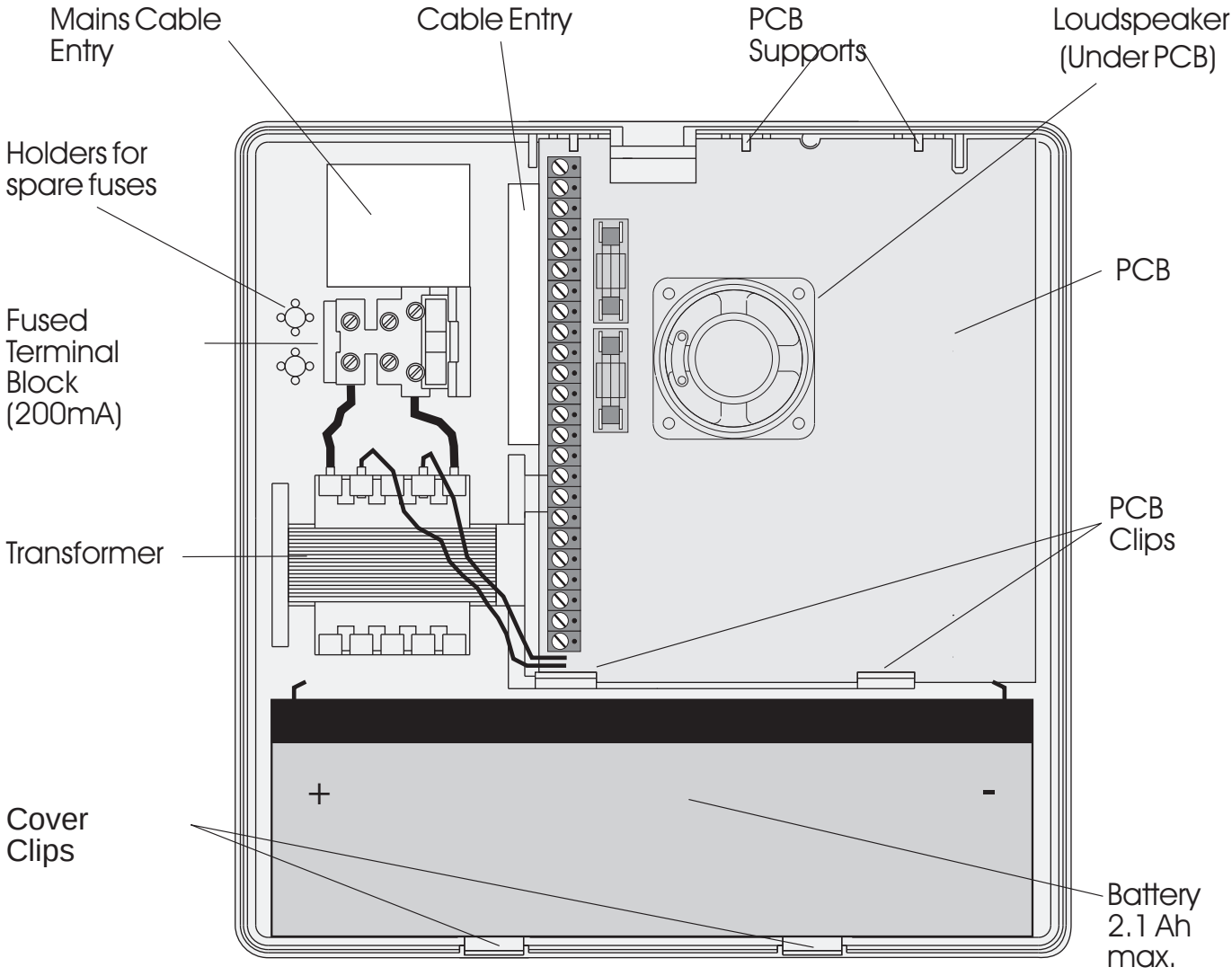


Figure 1 TSD402 Control Panel layout

Installing the Control Panel

☞ *For your safety, installation of the TSD402 must be conducted in the following sequence.*

1 Remove the screw from the top of the control panel and lift away the front cover.

2 Ensure that there is no battery in the housing, then remove the PCB as follows:
   a) Disconnect the AC leads from the transformer and unplug the internal loudspeaker from the Printed Circuit Board (PCB).

b) Pull down the plastic clip at the bottom right hand corner of the PCB and gently lift the PCB forward.

c) Repeat with the plastic clip at the bottom left hand corner of the PCB.

d) The bottom of the PCB will then swing forward and the whole PCB will come away from the base.

3 Hold the base in the required position and mark the centre of the keyhole positions. Remove the base, then drill and plug the holes. Note: Remember to allow enough room to get the cover screw in to top of panel when mounting the base.

4 Re-position the base and secure to the wall with 3 x No. 10 1¼" wood screws.

5 If a remote keypad is being fitted to the system, refer to page 16.

6 Re-fit the PCB assembly by aligning the top of the PCB into the 2 supports in the top of the housing ensuring that the edges of the board sit between the 2 flanges, then push the bottom of the PCB until it clicks in place.

7 Re-connect the AC leads to the transformer.

8 Connect the mains to the fused terminal block in the panel via an un-switched fused spur, ensuring that the cables enters the housing via its own cable entry point.

Mains Connection

The mains supply is connected to a 3 way "Euro Type" fused terminal block. To comply with BS4737 the supply should be fed from an un-switched fused spur fitted with a 3A fuse. All electrical connections should be carried out by a technically competent person and must comply with the current IEE regulations.

Battery Connection

A 2.1Ah battery must be fitted to the control panel to allow the system to function during a mains fail condition.

The TSD402 is equipped with a "Battery Protection" circuit so that if a battery is accidentally reverse connected or its voltage is below 8V, the "Battery Fault" LED illuminates. To clear the fault simply reconnect or replace the battery as appropriate.

Control Panel PCB Layout

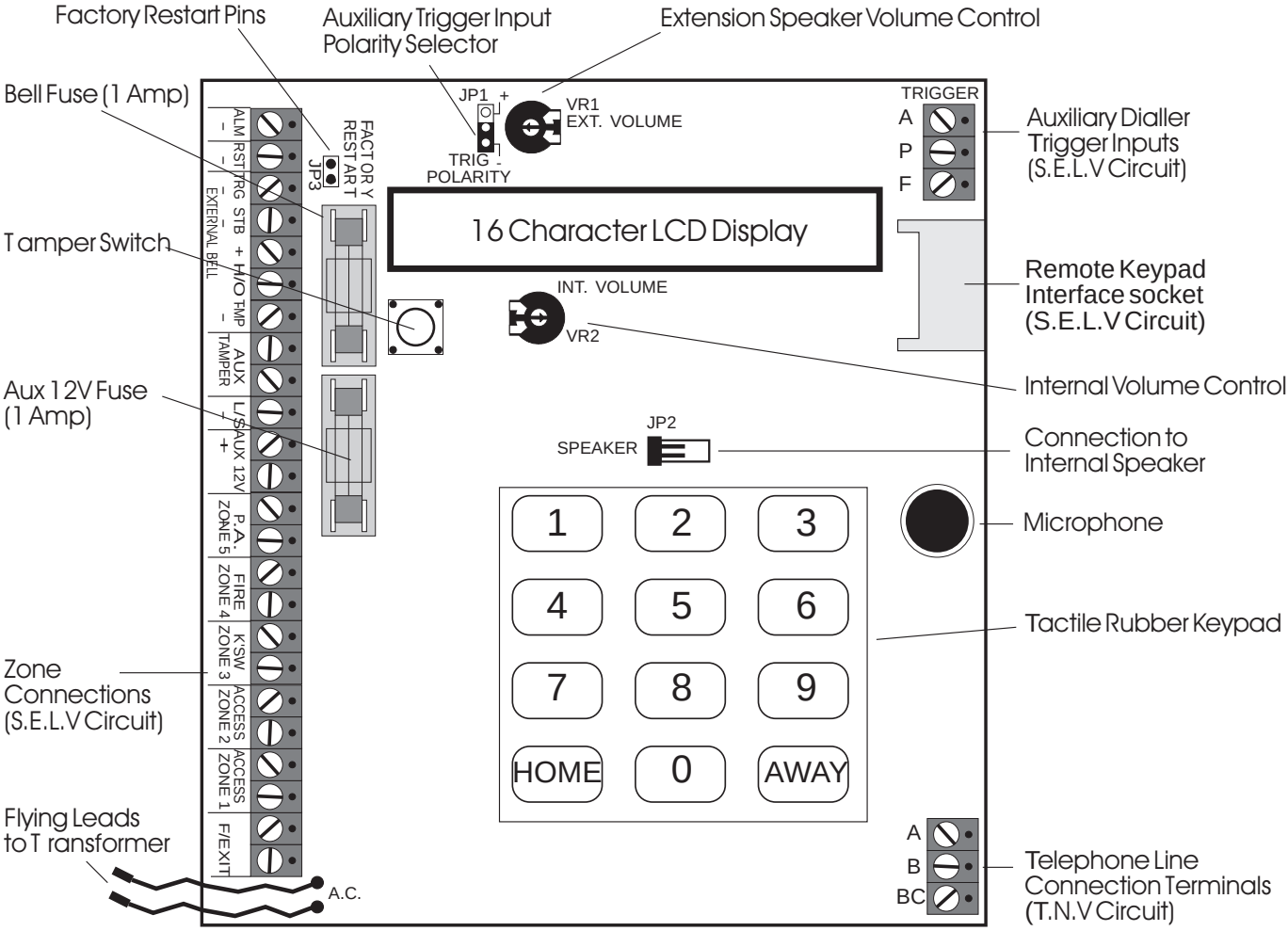


Figure 2 TSD402 PCB Layout

Connections & Controls

The main PCB has the following "Jumper Plugs" (JP), indicator LEDS and terminal connections:

TRIG POLARITY (JP1) - This jumper-link sets the signal polarity for the auxiliary speech dialler trigger inputs. The inputs may be either +ve applied to trigger or -ve applied to trigger.

SPEAKER (JP2) - The internal loudspeaker has a 2-way connector which plugs directly on to this set of pins.

FACTORY RESET (JP3) - All program data (Not messages) is stored in a Non-Volatile Memory chip (NVM). If the Factory Reset pins are shorted during power-up all stored system parameters are over written with the factory default settings. The engineer passcode is reset to 1234 and the User 1 passcode is set to 5678.

Connections & Controls (Cont.)

EXT. VOLUME (VR1) - If an extension loudspeaker is connected to the control panel, the volume of keypad bleeps, chime, entry and exit tones may be adjusted using this control (clockwise to increase). Alarm tones are always full volume.

INT. VOLUME (VR2) - This controls the volume of keypad bleeps, chime, entry and exit tones from the internal loudspeaker (clockwise to increase). The volume of the speech dialler playback messages are always full volume.

F/EXIT - This pair of terminals is for connecting to the Final Exit detection device, normally a set of magnetic contacts on the front door. The tamper loop should be connected in series with other loops across the terminals mark AUX TAMPER (see Connection diagram).

ZONE 1 (Access) - This pair of terminals may be connected to any type of normally closed detection device. When activated during a set condition, a full alarm is generated. It is also possible to program the zone as "Access" this allows the detector to be activated during entry and exit when setting/unsetting the system. If the zone is programmed as "Access" and is armed during a part-set (Home) condition it will start the entry timer if activated. The tamper loop should be connected in series with other loops across the terminals mark AUX TAMPER (*see Connection Diagram*).

ZONE 2 (Access) - As Zone 1.

ZONE 3 (K'SWITCH) - This pair of terminals may be connected to any type of normally closed detection device. When activated during a set condition, a full alarm is generated. It is also possible to program the zone as "Keyswitch" this allows the zone to be connected to an electrical keyswitch to set and unset the system. The keyswitch functionality maybe further programmed to either full set (Away) or part-set (Home) the system. (*see Programming*). The tamper loop should be connected in series with other loops across the terminals mark AUX TAMPER (*see Connection Diagram*).

ZONE 4 (Fire) - This pair of terminals may be connected to any type of normally closed detection device. When activated during a set condition, a full alarm is generated. It is also possible to program the zone as "Fire" this allows the zone to be connected to any type of normally closed smoke or heat detector. The tamper loop should be connected in series with other loops across the terminals mark AUX TAMPER (*see Connection Diagram*).

ZONE 5 (PA) - This pair of terminals may be connected to any type of normally closed detection device. When activated during a set condition, a full alarm is generated. It is also possible to program the zone as "PA" this allows the zone to be connected to any type of normally closed PA buttons. The tamper loop should be connected in series with other loops across the terminals marked AUX TAMPER (*see Connection Diagram*).

AUX 12V +/- - The auxiliary 12V terminals provides permanent 12V @ 300mA of power for detectors which require a low voltage supply e.g., PIR's, Vibration Detectors, Smoke Detectors etc. The output is protected by a 1 amp fuse (Aux 12V).

L/S - - A 16Ω extension loudspeaker may be connected between L/S- and AUX 12V+ terminals. The loudspeakers will reproduce all alarm and advisory tones generated by the control panel.

☞ ***If an extension loudspeaker is fitted to the system it must be sited more than 0.5 metres from the control panel. The play-back of speech dialler messages are not reproduced at the extension loudspeaker.***

AUX TAMPER - The tamper protection for all devices must be connected in series then connected to this pair of terminals.

TMP- - This terminal provides the tamper protection to the external sounder. It should be connected to the negative tamper return output on the external sounder. If the external sounder is not required to be tamper protected, this terminal must be linked to H/O -.

H/O -/+ - The "Hold Off -" and "Hold Off +" terminals provide permanent 12V hold off supply for the external sounder or SAB module. The output is protected by a 1 amp fuse (Bell Fuse).

STB - - This terminal provides the switched negative strobe trigger output (max. 500mA). It should be connected to the -ve strobe input on the external sounder or SAB module.

The strobe output is activated on all types of alarm (Fire, PA and Alarm), the output will only deactivate when the triggered alarm is fully reset.

If a zone remains in a fault condition when the system attempts to set, the strobe output is activated to give the user external indication that the system has failed to set.

Connections & Controls (Cont.)

TRG - - This terminal provides the switched negative bell trigger output (max. 500mA). It should be connected to the -ve bell trigger input on the external sounder or SAB module. The output may be programmed for SAB or SCB operation:

SAB
When programmed as SAB, the output will switch to 0V on alarm.

SCB
When programmed as SCB, the output provides a 0V hold off, which is removed on alarm.

RST - - This terminal may be programmed as either:

Detector Reset
This type of output is used to power detectors which latch their alarm condition (e.g., smoke detectors, vibration detectors etc.). Power for such detectors must be connected between AUX 12V+ and RST-. Following a full alarm the power to this output is momentarily removed when the user/engineer has reset the system, this will allow the such detectors to "Reset".

Switched 12V
When programmed as "Switched 12V" the output may be connected to the latch input terminal on latching detectors (e.g., PIRs etc.). This feature is normally used when more than one detector is connected to a single zone. It allows the user to identify the alarm source by latching the indicator LED on the detector that caused the alarm activation. The latched LED will clear when the system is reset.

ALM - - This terminal is switched negative (100mA) on alarm and is removed when the system is reset.

TRIGGER F,P & A - These terminals are the auxiliary Fire, PA and Alarm trigger inputs for the speech dialler, they may be used to trigger the the unit independently from that of the control panel. For example, a smoke detector could be directly connected to input "F", when activated it would trigger the "Fire" message on the speech dialler but not cause the control panel to alarm.

A, B & BC - These terminals are for the telephone line connections, they must be connected to an approved "B.T. Master socket" or "Extension socket" using the lead provided (see BT Connections).

Connection Diagram

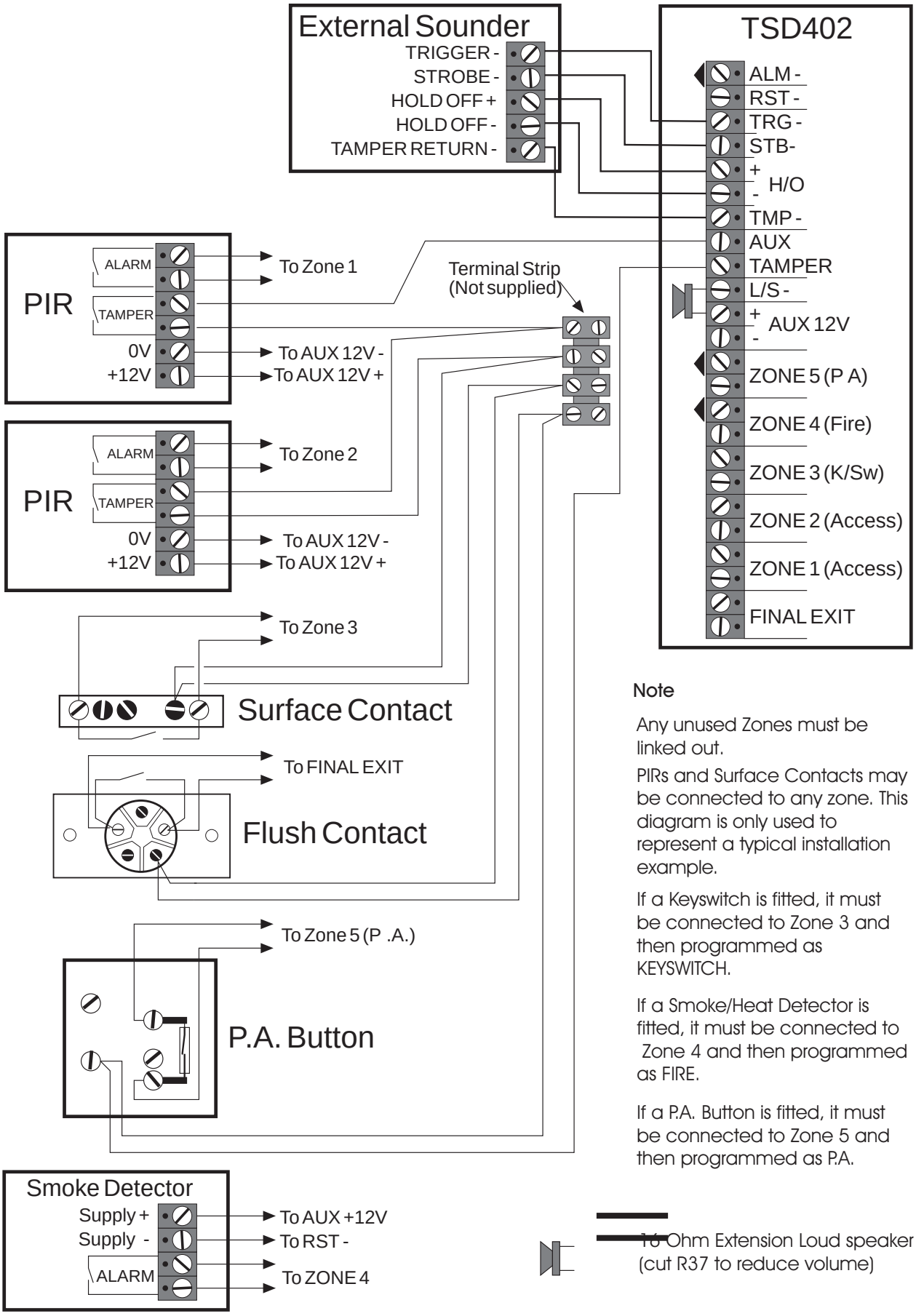


Figure 3 Sample Connection Diagram

Installing a TS400 Remote keypad

Up to four TS400 remote keypads may be connected to the TSD402 control panel. The remote keypad is supplied with an interface PCB which plugs onto the main PCB. Remote keypad(s) may be sited up to a maximum of 50 metres from the control panel using a six-core cable for connections.

☞ *The TS400 remote keypad is only suitable for setting, part-setting, unsetting and limited programming functions. All other system operations must be carried out at the control panel.*

1 Remove the TSD402 PCB from the case (see page 9 for full details)

2 Connect each core of the six-core cable to the interface terminals "LEDCBA" (make a note of the colours used for each connection).

3 Pass the yellow flying-lead behind the PCB and connect it to the L/S-terminal.

4 Plug the interface PCB onto the TSD402 PCB (see figure 2 on page 11).

5 Replace the TSD402 PCB.

6 Separate the remote keypad cover and base by using a screwdriver to push two of the clips (top or bottom) inwards from the cover retaining slots. Then lift the cover assembly away, noting that the PCB is connected to the under side of the cover.

7 Hold the remote keypad base in position (keyhole to the top) and mark the three securing holes, drill and plug the wall as required. Pass the six-core cable into the base via the cable entry points as appropriate and secure the base to the wall.

8 Connect each core of the six-core cable to the remote keypad terminals "EDCBAL", ensuring that the connections through to the control panel are A-A, B-B, C-C etc. If more remote keypads are to be fitted, they may be connected in a "Star" or "Daisy-chain" configuration (providing the cable length to the last or furthest remote keypad does not exceed 50 meters).

9 Carefully reattach the front cover assembly to the remote keypad base ensuring that all cables are clear of the tamper switch spring and the cover is securely clipped to the base.

Wiring the Auxiliary Dialler Inputs

The auxiliary speech dialler inputs may be connected to devices that are required to signal the speech dialler independently from the control panel. The inputs may be selected for various types of signalling as shown in Figure 4.

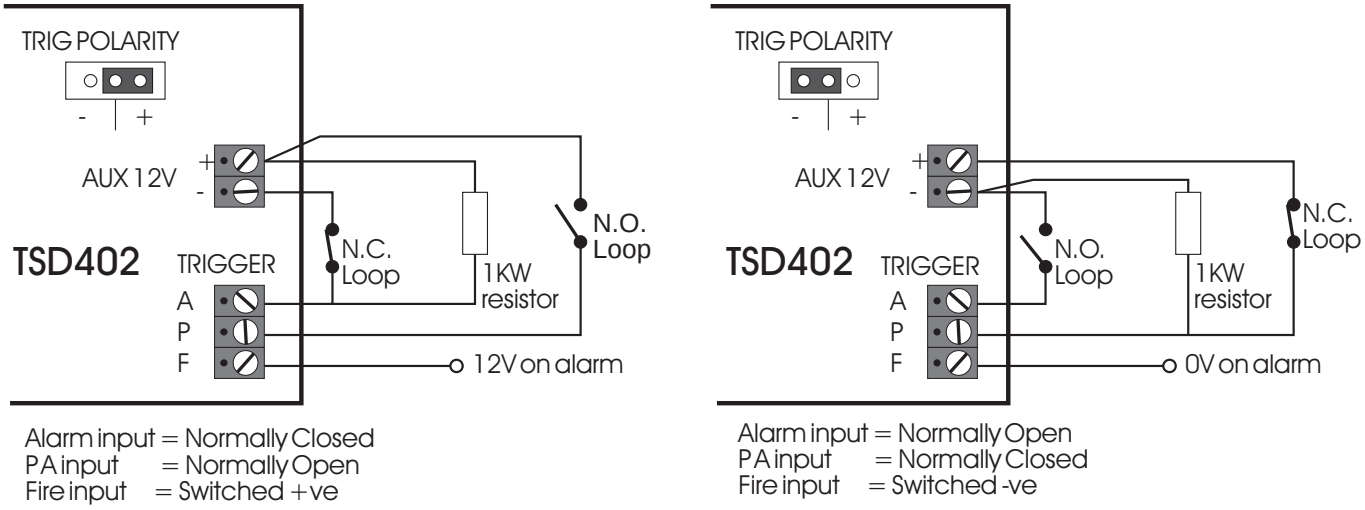


Figure 4 Signalling Types for Auxiliary Dialler Inputs

Telephone Line Connections

There are two methods of connection for the TSD402 to the telephone line. The first is to use the 2 metre lead supplied (recommended method of connection) which will directly plug into any standard British Telecom telephone socket. The second is to directly connect the unit to an NTE5 Master Socket (Line Box). Figure 5 shows both methods of connection.

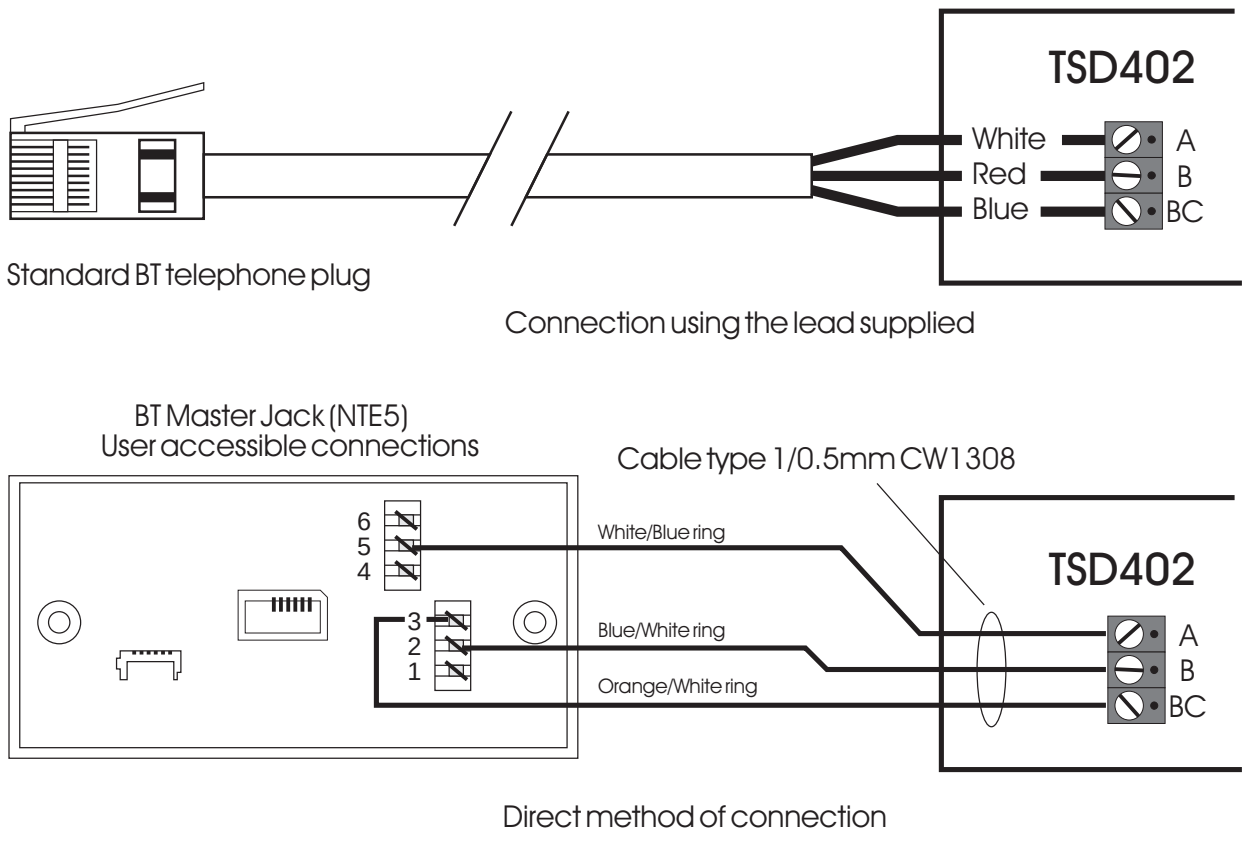


Figure 5 The Two Methods of BT Line Connections

Pre Power-Up Checks

Before applying any power to the system, give the system one final check to ensure that:

1 The telephone lead is unplugged from the telephone socket.

2 The wiring and connections conforms to the requirements detailed in this manual.

3 All system cables are kept clear of mains supply cables, telephone cables and R.F. cables. It is recommended that cable ties be used to keep cables separated.

4 Calculate the total system power consumption and ensure that it does not exceed 750mA.

5 Mains supply cables to the system are connected to an un-switched fused spur.

Initial Power-Up

1 Place a small screwdriver blade between the pins on the Control Panel PCB, marked FACTORY RESTART (located top left corner). This will ensure that the factory default values are loaded into memory as show below:

Engineer's Passcode	-	1 2 3 4
User 1 Passcode	-	5 6 7 8
User 2 Passcode	-	Not programmed
Zone 1	-	Night
Zone 2	-	Access
Zone 3	-	Night
Zone 4	-	Night
Zone 5	-	Night
Final Exit	-	Exit
Exit Time	-	030 Seconds
Entry Time	-	030 Seconds
Bell Duration	-	020 Minutes
Remote Reset Number	-	004
Bell Output	-	SAB (-ve Applied)
Setting Mode	-	Timed Exit
Reset Authority	-	User Reset
Number of Re-arms	-	3
Operation of Key Switch	-	AWAY Set (Full)
Operation of RST- Output	-	Switched 12V
Operation of Final Exit in P/Set	-	Final Exit
HOME Setting	-	Zone 1 Omitted
Dialler Alarm Options	-	No Alarms Report
Acknowledgement Option	-	Cleared by any 1

Initial Power-Up (Cont.)

2 Switch on the 240V mains supply and remove the screwdriver blade. The internal alarm will bleep every 30 seconds the display will show: CF - E.

3 Connect the standby battery. If the display shows: bAtt. FLt and the internal alarm sounds, then the battery may have been incorrectly connected or its voltage is below 8V. Disconnect the battery **immediately** and reconnect or replace as appropriate.

4 Push the battery into place at the bottom of the housing and re-fit the front cover.

5 The display will show: PLEASE rE-rECOrd, this message will only be cleared when one or more of the speech dialler messages has been recorded (*see User Manual for full details*).

6 Enter the engineer's passcode (default [1] [2] [3] [4]), the display will show: EnGr. OPt IOn - (engineer programming menu selected)

7 The telephone lead can now be plugged into the telephone socket.

8 Fit the battery link in the external siren and replace cover.

9 The system is now ready for engineer programming.

Programming

Programming Menus

There are two programming menus within the system. The engineer's programming menu and the user programming menu. The figure below shows the structure of both programming menus, however the engineers programming menu is only covered in full detail within this manual. **For full details on the user programming, see User Manual.**

Either menu can be accessed from the unset condition, however the function of the HOME and AWAY keys change once the programming menu is selected. The HOME key functions as the ENTER key and the AWAY key functions as the ESCAPE key.

Engineer's Option Menu

UNSET

Enter Engineer's Passcode
(Default [1] [2] [3] [4])

ENGR.OPTION -

[1] = Program Zones

[2] = View Event Log

[3] = Walk Test

[4] = Exit Time *

[5] = Entry Time *

[6] = Bell Duration *

[7] = Change Engineer's Code *

[8] = Change Remote Reset No. *

[9] = System Options

[0] = Dialler Alarm Options

[AWAY] = Return to Unset mode

User Options Menu

UNSET

Enter first 3 digits of Passcode then [HOME]
(e.g., [5] [6] [7] [HOME])

USER OPTION -

[1] = Bell Test

[2] = Walk Test

[3] = Remote Reset *

[4] = Change Passcode 1 *

[5] = Change Chime Zones

[6] = Change Passcode 2 *

[7] = Home Area Configuration

[8] = Dialler Programming *

[9] = View Event Log

[0] = Dialler Reporting Options *

[AWAY] = Return to Unset mode

* These options cannot be programmed using the remote keypad.

Program Zones (key 1)

The TSD402 zones may be programmed so that they perform different functions. The zones types are as follows:

Night (N) - Zones 1-5 may be programmed as a Night zone, this type of zone will only generate a full alarm when activated during a set condition. If during a full alarm condition the speech dialler Alarm channel is programmed to report, it will activate and send the Alarm message.

Access (A) - Zones 1 and 2 may be programmed as an Access zone, this type of zone is automatically isolated during the entry/exit procedure to allow a "walk through" route for the user. Once the system is full set the Access circuit responds as a Night circuit. If an Access zone is armed during a part-set (HOME) condition it will start the entry timer if activated.

Key switch (S) - Zone 3 may be programmed as a Keyswitch zone, this type of zone will set the system when active (zone open) and unset the system when healthy (zone closed). The Keyswitch zone functionality may be further programmed to either full set (AWAY) or part-set (HOME) the system (*see System Options*).

Fire (F) - Zone 4 may be programmed as a Fire zone, this type of zone is monitored at all times, when activated a distinctive internal sounder tone is generated and the external sounder is pulsed. If during a fire alarm condition the speech dialler Fire channel is programmed to report, it activates and sends the Fire message.

P.A. (P) - Zone 5 may be programmed as a Personal Attack (P.A.) zone, this type of zone is monitored at all times, when activated a full alarm is generated. If during a PA alarm the speech dialler P.A. channel is programmed to report, it will activate and send the P.A. message.

Final Exit (E or A) - The Final Exit zone is the last detector that is activated when leaving the protected premises and the first detector to be activated when re-entering the protected premises. This zone may programmed to respond as follows:

Exit (E) When programmed as Exit the Final Exit zone will generate an interrupted tone when opened during the Exit procedure.

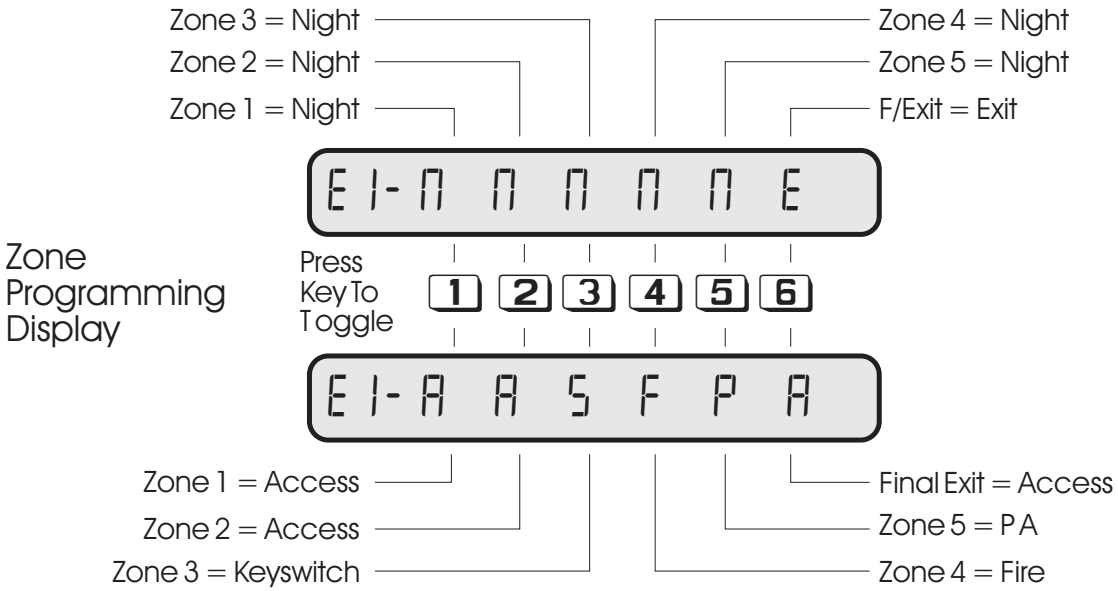
Access (A) When programmed as Access the Final Exit zone will remain silent when opened during the Exit procedure. The feature is useful if a PIR is used for the Final Exit zone, as it will normally be activated several times before leaving the building.

Program Zones (Cont.)

1 Ensure that the "ENGR. OPTION -" is displayed. Press [1] to select Program Zones.

2 Press keys 1 to 6 to toggle between the two options for each zone (as Shown Below).

3 When completed, press [HOME] to accept, a two tone acceptance tone will be heard.


Zone 3 = Night
Zone 2 = Night
Zone 1 = Night
Zone 4 = Night
Zone 5 = Night
F/Exit = Exit
E1-N N N N N E
Zone Programming Display
Press Key To Toggle
1 2 3 4 5 6
E1-A A S F P A
Zone 1 = Access
Zone 2 = Access
Zone 3 = Keyswitch
Final Exit = Access
Zone 5 = P A
Zone 4 = Fire

View Event Log (key [2])

The TSD402 will store up to 64 events within the memory log. When this option is selected the most recent event is displayed first. Pressing the [HOME] key takes you backwards through the Log and pressing the [AWAY] key abandons the View Log option. Table 1 shows event log descriptions.

Display	Description
AC OFF	Mains power removed.
AC ON	Mains power restored.
AUPL tA	Auxiliary or panel lid tamper alarm.
bAtt FLt	Battery fault (battery reversed or below 10.5V).
CCt AL -	Full alarm from zone 1 - 5 (F = Final Exit when part-set).
CodE tA	Code Tamper (4 incorrect passcode entries).
ENtrY tO	Entry timed-out (system not unset after activating F/Exit zone).
F IrE AL	Fire Alarm activated.
SEt A	AWAY Set.
SEt FA IL	System failed to set (zone still active at end of exit time).
SEt H	HOME Set.
USEr -	User 1 or 2 passcode entered (User 3 = keyswitch).
- - - - - - - -	No Event

Table 1 Log Event Codes and Descriptions

View Event Log (Cont.)

1 Ensure that the "ENGR. OPTION -" is displayed. Press [2] to select the View Log option.

2 Press the [HOME] key to move backwards through the Log.

3 When completed, press [AWAY] to abandon the View Log option.

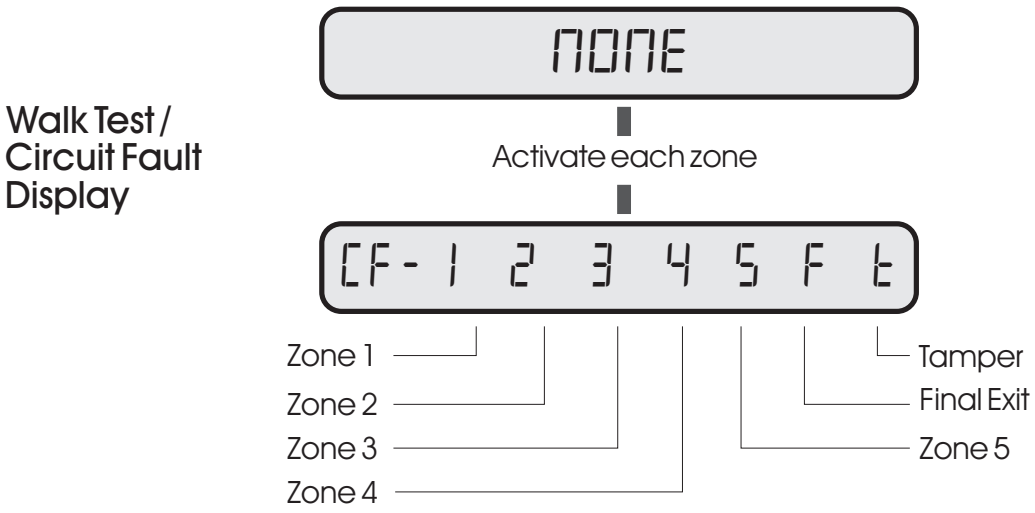
Walk Test (key [3])

The Walk Test option allows the engineer to test the function of all detection zones without causing an alarm. As each zone is activated the zone number is displayed and the internal sounders generate a two-tone sound. When the zone is deactivated the sounder will stop, but the display will latch the activated zone.

1 Ensure that the "ENGR. OPTION -" is displayed. Press [3] to select the Walk Test option.

2 Activate each zone in turn by opening doors fitted with alarm contacts and walking in front of movement detectors. The display will show the activated zones (*as shown below*).

3 When completed, press [AWAY] to abandon the Walk Test option.



Exit Time (key [4])

This timer sets the delay between the user initiating the setting procedure and the system actually setting. This only applies when the system is programmed to set by "Timed Exit" (*see System Options*). The timer may be set between 1 and 255 seconds.

1 Ensure that the "ENGR. OPTION -" is displayed. Press [4] to select the Exit Time option.

2 Enter the timer setting using the number keys e.g., to set the Exit Time to 15 seconds, enter "0 1 5".

3 When completed, press [HOME] to accept, a two tone acceptance tone will be heard.

Entry Time (key 5)

When the entry procedure is initiated, the Entry Timer is started and the display counts down the remaining time. If a valid user passcode is not entered when the timer reaches zero, a full alarm tone is generated from the internal sounders only and the timer is restarted. If a valid user passcode is not entered when the timer reaches zero for the second time the external sounder is activated. The timer may be set between 1 and 255 seconds.

1 Ensure that the "ENGR. OPTION -" is displayed. Press 5 to select the Entry Time option.

2 Enter the timer setting using the number keys e.g., to set the Entry Time to 25 seconds, enter "025"

3 When completed, press HOME to accept, a two tone acceptance tone will be heard.

Bell Duration Time (key 6)

This timer controls the duration of the external sounder when the system is triggered into a full alarm condition. The timer may be set between 000 and 255 minutes, when the timer is set to "000" the output becomes continuous.

1 Ensure that the "ENGR. OPTION -" is displayed. Press 6 to select the Bell Duration Time option.

2 Enter the timer setting using the number keys e.g., to set the Bell Duration Time to 10 minutes, enter "010"

3 When completed, press HOME to accept, a two tone acceptance tone will be heard.

Change Engineer's Passcode (key 7)

The factory default engineer's passcode is set to 1 2 3 4, but the installation engineer should change this to their own personal 4 digit passcode as follows:

1 Ensure that the "ENGR. OPTION -" is displayed. Press 7 to select the Change Engineer's Passcode option.

2 Enter the new passcode using the number keys e.g., to set the passcode to 2580 enter "2580"

3 When completed, press HOME to accept, a two tone sound indicates acceptance, a single low tone sound indicates that the new passcode was not accepted. Repeat the procedure, trying a different passcode.

Remote Reset Number (key 8)

The "Engineer Reset" option may be overridden by the user, operating the "Remote Reset" facility. If an alarm is generated the system will respond with a four digit "seed" code which the user quotes to the alarm company. The "seed" code is then entered into a decoder and a unique "Remote Reset" code is generated. This is passed back to the user and, on entering the "Remote Reset" code, the system will reset.

Remote Reset Number (Cont.)

The "Remote Reset" code is generated using an algorithm identified by a 3 digit number. Alternative algorithms may be selected but these must correspond to that used by the alarm company otherwise the "Remote Reset" code will be incorrect.

The "Remote Reset" feature may be disabled altogether by setting the number to "000"

1 Ensure that the "ENGR. OPTION -" is displayed. Press [8] to select the Remote Reset Number option.

2 Enter the Remote Reset Number using the number keys e.g., to set the number to 000 (disable Remote Reset) , enter "000"

3 When completed, press [HOME] to accept, a two tone acceptance tone will be heard.

System Options (key [9])

The TSD402 has six system options which change the functionality of the system. The options are as follows:

Bell Output Type

SAB (A)
When programmed as SAB the output will switch to 0V on alarm.

SCB (C) When programmed as SCB the output provides a 0V hold off, which is removed on alarm.

Setting Mode

Timed Exit (E)
The system will set when the Exit timer has expired.

Final Exit (F)
The system will set when the last detector or door contact is activated during the exit procedure.

Note: *When the system is part-set (HOME) the system will always set by Timed Exit and is Silent.*

Reset Authority

User Reset (U)
Following an alarm the system can be reset by the user.

Engineer Reset (E)
Following an alarm the system can only be reset by the engineer or Remote Reset (If enabled).

Re-arm Options

1 re-arms (1)
When an alarm occurs, the internal and external sounders are operated for the length of the bell duration. At the end of this time the alarm is silenced and the all zones are re-armed. Any zones that are active will be automatically isolated until they return to their healthy state. If an alarm occurs from the same zone it will cause the internal and external sounders to operate again, at the end of the alarm the zone is "Locked-out" and prevented from generating another alarm. All other healthy zones will re-arm and will only be "Locked-out" when they have caused another alarm.

3 Re-arms (3)
Operates as above, but zones are only "Locked-out" after the system has re-armed 3 times.

Key Switch Options

AWAY (A)
When key switch zone is opened the exit procedure for AWAY set will start and when exit timer has expired or the Final Exit zone is operated the system will be full set. When the zone is closed the system will unset.

HOME (H)
When the key switch zone is opened the exit timer will start and when the timer has expired the system will be part-set. When the zone is closed the system will unset.

RST Output Options

Switched 12V (5)
This may be connected to the "Latch" input on latching detection devices (such as PIR's).

Detector Reset (d)
This may be used as the 0V connection to detectors that require the power to be removed to reset them (such as Smoke detectors and Vibration Sensors).

Part-set Final Exit Options

Final Exit (E)
When the system is part-set (HOME) the Final Exit zone will start the entry procedure if activated.

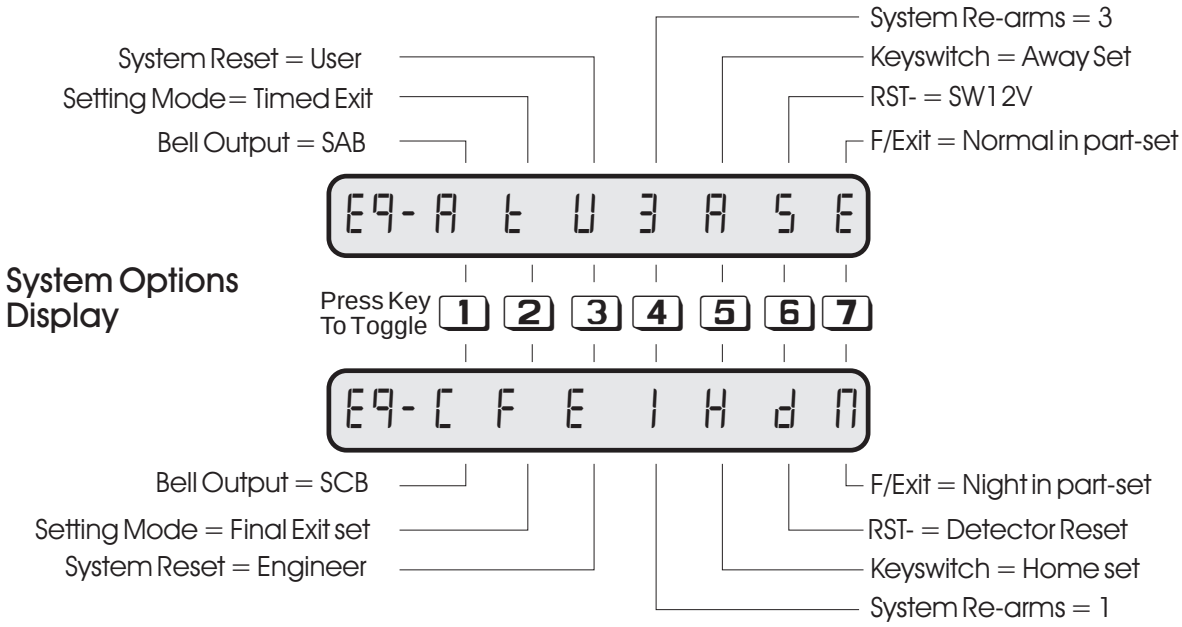
Night (n)
When the system is part-set (HOME) the Final Exit zone will cause a full alarm if activated (i.e., the Final Exit becomes a Night zone when the system is part-set).

System Options (Cont.)

1 Ensure that the "ENGR. OPTION -" is displayed. Press [9] to select System Options.

2 Press keys 1 to 7 to toggle between the two settings for each option (as Shown Below).

3 When completed, press [HOME] to accept, a two tone acceptance tone will be heard.


System Re-arms = 3
System Reset = User
Keyswitch = Away Set
Setting Mode = Timed Exit
RST- = SW1 2V
Bell Output = SAB
F/Exit = Normal in part-set
E9-A t U 3 A S E
System Options Display
Press Key To Toggle
1 2 3 4 5 6 7
E9-C F E I H d N
Bell Output = SCB
F/Exit = Night in part-set
Setting Mode = Final Exit set
RST- = Detector Reset
System Reset = Engineer
Keyswitch = Home set
System Re-arms = 1

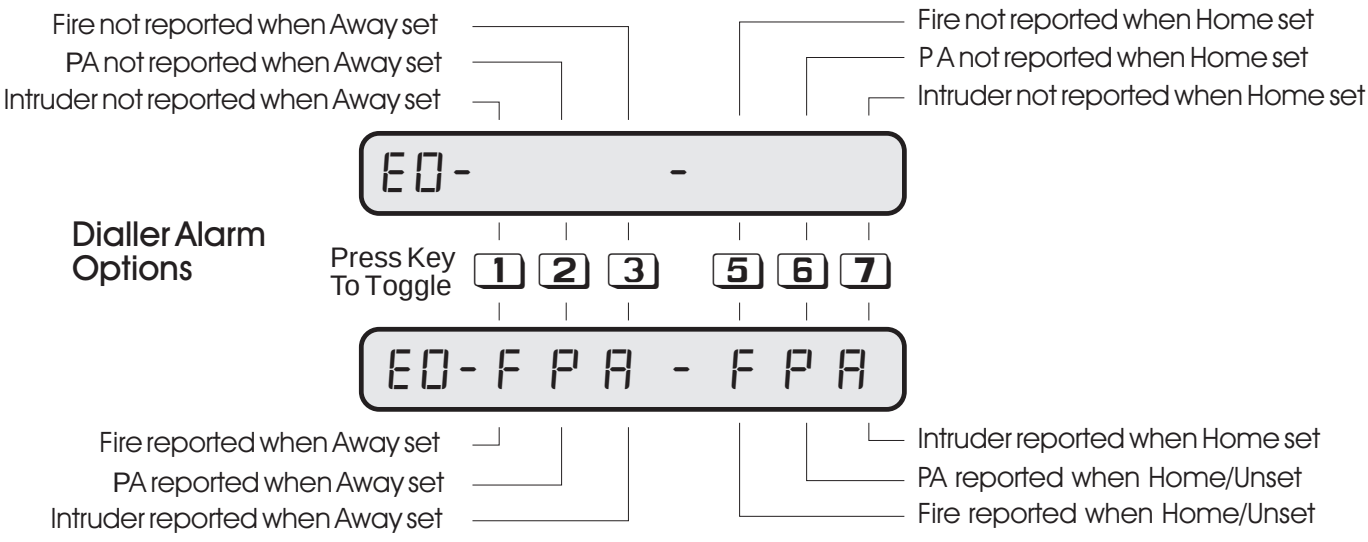
Speech Dialler Alarm Options (key [0])

The speech dialler may be configured to trigger on a FIRE, P.A. or ALARM activations for both the Away set and the Home set. Changing any of the alarm options does not affect the operation of the auxiliary speech dialler input (if used).

1 Ensure that the "ENGR. OPTION -" is displayed. Press [0] to select the Dialler Alarm Options.

2 Press keys [1] -[3] or [5] -[7] to toggle each option on or off (as Shown Below).

3 When completed, press [HOME] to accept, a two tone acceptance tone will be heard.


Fire not reported when Away set
Fire not reported when Home set
PA not reported when Away set
P A not reported when Home set
Intruder not reported when Away set
Intruder not reported when Home set
E0- -
Dialler Alarm Options
Press Key To Toggle
1 2 3 5 6 7
E0-F P A - F P A
Fire reported when Away set
Intruder reported when Home set
PA reported when Away set
PA reported when Home/Unset
Intruder reported when Away set
Fire reported when Home/Unset

Returning to the Unset Mode (key AWAY)

Once all the engineer programming is completed the system can be returned to the unset mode by pressing the AWAY key. However since the speech dialler has not yet been programmed the display will still show the "PLEASE RE-RECORD" message. This will be cleared when one or more of the speech dialler messages have been recorded **(see User Manual for full details).**

Full Setting the System (AWAY)

The engineer may use his passcode to Set the system as follows:

1 Enter first two digit of engineer's passcode then press the AWAY key (e.g., 1 2 AWAY).

2 The exit tone will start and the display shows the remaining time.

3 When the exit tone stops, the system is full set.

Part-Setting the System (HOME)

The engineer may use his passcode to part-set the system as follows:

1 Enter first two digit of engineer's passcode then press the HOME key (e.g., 1 2 HOME).

2 The display shows the remaining time (part-set is always silent).

3 When the two-tone sound is heard, the system is part-set.

Unsetting the System

The engineer may only use his passcode to unset the system when the system is set or part-set using the engineer passcode (i.e., if the system is set by the user the engineer passcode will NOT unset the system).

1 Enter via the prescribed entry route.

2 The entry tone will start and the display will show the remaining time.

3 Enter the engineer's passcode (e.g., 1 2 3 4).

4 The display shows UNSET.

Installation Record

Zone	Type	Location	Chime	Home
1	Night / Access		On / Off	Armed / Omitted
2	Night / Access		On / Off	Armed / Omitted
3	Night / keyswitch		On / Off	Armed / Omitted
4	Night / Fire		On / Off	Armed / Omitted
5	Night / P.A.		On / Off	Armed / Omitted
Final Exit	Exit / Access		On / Off	Armed / Omitted

Exit Time:	Entry Time:	Bell Duration:

Bell Output	Setting Mode	Reset Authority	System Re-arms	Keyswitch Function	RST-Output	Part-set Final Exit
SAB	Timed	User	3	Away	SW12V	Final Exit
SCB	F.Exit	Engr	1	Home	Det. Reset	Night

Away set reports	Fire:	PA:	Intruder:
Home set reports	Fire:	PA:	Intruder:

Remote Reset No.	
Remote Reset Tel No:	
Installed By:	
Date:	Tel No:

Keep this record inside the control panel for your future reference.

Key	Function	Action	Options
1	Program Zones	Press 1-6 to toggle zone types Press AWAY to end	1 Zone 1 = **N**ight or **A**ccess 2 Zone 2 = **N**ight or **A**ccess 3 Zone 3 = **N**ight or Key**S**witch 4 Zone 4 = **N**ight or **F**ire 5 Zone 5 = **N**ight or **P**A 6 Final Exit = **E**xit or **A**ccess
2	View Log	Press HOME to advance Press AWAY to end	
3	Walk Test	Activate detectors Press AWAY to end	
4	Exit Time	Enter 3 digit time Press HOME to accept	Enter time between 001 - 255 (seconds)
5	Entry Time	Enter 3 digit time Press HOME to accept	Enter time between 001 - 255 (seconds)
6	Bell Duration	Enter 3 digit time Press HOME to accept	Enter time between 000 - 255 (minutes) Note: 000 = Continuous
7	Change Engineer Code	Enter new 4 digit code Press HOME to accept	
8	Change Reset No	Enter 3 digit code Press HOME to accept	Enter number between 000 - 255 Note: 000 = Disable Remote Reset
9	System Options	Press 1-7 to toggle system options Press AWAY to end	1 Bell Output = S**C**B or S**A**B 2 Setting Mode = **F**inal Exit or **T**imed Exit 3 Reset By = **U**ser or **E**ngineer 4 Re-arms = **1** or **3** 5 Keyswitch Option = **A**way or **H**ome 6 RST Output = **D**etector Reset or **S**W12V 7 Final Exit in P/Set = Final **E**xit or **N**ight
0	Dialler Alarm Options	Press 1-3 & 5-7 to toggle options Press HOME to accept	1 Away Fire = Reported or not reported 2 Away PA = Reported or not reported 3 Away Intruder = Reported or not reported 5 Home Fire = Reported or not reported 6 Home PA = Reported or not reported 7 Home Intruder = Reported or not reported
Away	Return to unset		

Engineer's Quick Reference Programming Chart

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CE

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